

# Kim-Stan Landfill

Alleghany County, Virginia  
Superfund Program Site Fact Sheet

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**Type of Facility:** Sanitary (MSW) Landfill

**Contaminants:** Polychlorinated biphenyls (PCBs), mercury, aluminum, medical wastes and other contaminants associated with landfills

**Funding:** Fund Lead

## Site Description and History

The Kim-Stan Sanitary Landfill is situated on a 40.9-acre tract of land at the base of the northwest flank of the Rich Patch Mountains, where the mountains meet the alluvial floodplain of the Jackson River. The landfill was operated between November 1972 and the fall of 1988 as a privately owned facility that accepted an average of 30 to 40 tons per day of local municipal solid waste (MSW) from Alleghany County. During this 15-year period an estimated 140,000 tons of MSW was buried in an area 15 acres in size between the highway embankment for Route 696 and the base of the mountains. The maximum cut below existing grade about 15 to 20 feet, and the maximum fill thickness was probably no more than 40 feet.

The ownership and operation of the landfill changed in 1988. In 18 months between November 1988 and May 1990, when VDEQ terminated operations under court order, an estimated additional 725,000 tons of out of state baled and conventionally placed commercial MSW was buried at the site at rates that approached 2,000 tons per day. To accommodate this waste, the operations made a 50 to 100 foot wide horizontal cut into the shale bedrock at the base of the mountains forming a steep, high wall to the property line. MSW, up to 60 feet deep, has been placed directly against the base of this high wall cut. The MSW disposal area covers 24.3 acres, including isolated deposits outside of the landfill footprint, and reaches a maximum thickness of about 85 feet.

After shutting down operations, VDEQ coordinated emergency placement of soil over the site with VDOT. Subsequently, VDEQ contracted with CH2MILL to do a groundwater assessment study (1992) and to develop a site closure plan (1993).

The General Assembly of Virginia provided funding through VDEQ to Alleghany County to implement certain critical parts of the closure plan, including diversion of mountain drainage and base flow from the gully alluvium around the site. The first phase – installation of a pipeline to collect the drainage in the gully above the site and divert it to existing channels west of the landfill – was essentially completed August 2000. The

next phase – which extends the pipeline across State Route 696 and off-site – was completed the following year. The drainage improvement project has EPA's concurrence, and VDEQ worked closely with the County to assure this portion of the remedy would be consistent with future Superfund actions.

The site was added to the NPL in August 1999. The work plan for EPA's RI/FS was approved and sampling activities were conducted over the summer of 2000. The RI/FS was completed in the summer 2002.



*Kim-Stan Landfill, Stormwater Diversion Project  
Photo by Ward Robens*

### **Threats and Contaminants**

According to groundwater contamination assessments, approximately 36,000 gallons of leachate per day (gpd) is being generated in the landfill in its present physical condition. The rate of leachate generation is also expected to vary from 16,000 gpd during dry weather condition to around 75,000 gpd under wet weather conditions.

There are four sources of infiltrating water contributing to the production of leachate. Over 45% of the total leachate generated is caused by infiltration of precipitation directly through the surface of the landfill. Another 35% is generated by the infiltration of base flow from the alluvium in the Kim-Stan gully drainage off the mountain and from seepage through the unlined run-on diversion ditches along the uphill side of the landfill. Groundwater inflow accounts for the remaining 20% of the generated leachate.

### **Current Site Status**

The Record of Decision (ROD) was signed in September 2002. The remedy includes the following components:

- Consolidation of landfill wastes visible at the surface outside the landfill property boundary into the landfill property line;
- Installation of a leachate collection system (trench and barrier wall) which shall prevent the migration of leachate from the landfill property and contain such leachate within the landfill property boundary in a manner that will allow for removal and treatment of the leachate at an off-site facility.
- Installation of piping and associated equipment to convey the collected leachate to the Low Moor Waste Water Treatment Plant ("LMWWTP") for treatment.

- Performance of upgrades to the LMWWTP to facilitate adequate treatment of collected landfill leachate.
- Conveyance of collected landfill leachate to the LMWWTP and treatment of the leachate.
- Installation of a multi-layer cap atop the landfill that shall eliminate, or reduce to the maximum extent practicable, the infiltration of water into the waste and the resulting production of leachate and groundwater contamination.
- Routine monitoring of groundwater to document progress in meeting the groundwater performance standards and to determine the need for continued limits on groundwater use.
- Implementation of institutional controls to protect the integrity of the remedy and to prevent use of contaminated groundwater until the groundwater performance standards are achieved.

The remedial design was completed in September 2003.

The remedial action construction of the upgrades to the LMWWTP, and leachate conveyance pipeline and pump stations was started in January 2006. This construction should be completed and system operational in early 2007. The construction of the remainder of the leachate collection system and landfill cap is awaiting additional EPA funding.

EPA will continue to pay for the majority of site costs until the RA is complete. EPA is processing VDEQ site work credits for work carried about by the state and local governments prior to EPA funded work.

### **Community Relations and Concerns**

The Kim Stan Advisory Committee, a local citizens group formed to monitor activities at the site, received its Technical Assistance Grant from EPA in May 2000. The Committee meets once a month.

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